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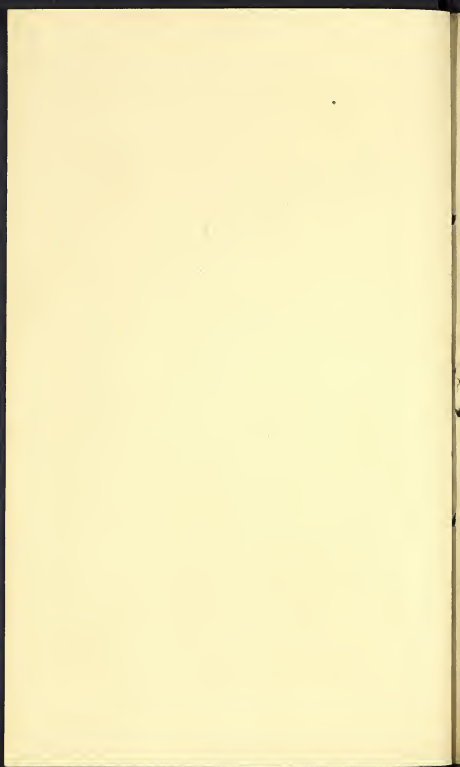
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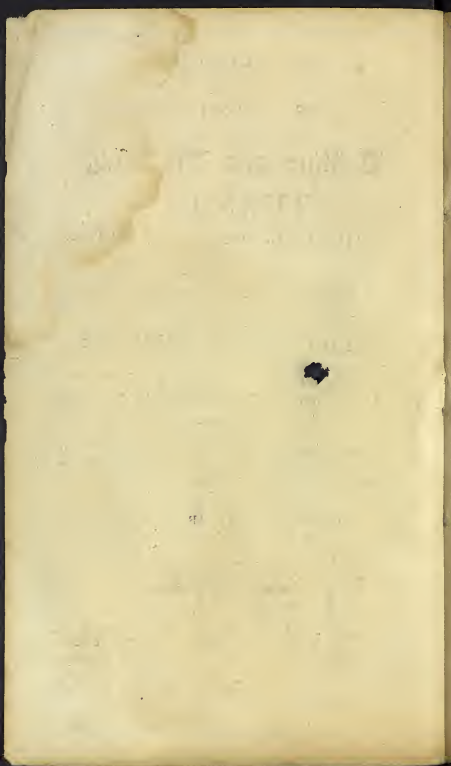


“ Agriculture is not only an Art, but a *necessary* and a *great* one,
“ and Agriculturists ought to aim at two things, *UTILITY* and
“ *Pleasure*.”

"HÆ TIBI ERUNT ARTES PACIS."



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TO THE MOST NOBLE
MARQUIS TOWNSHEND,
(tc. tc.

MY LORD,

THE advantages which this kingdom has derived from "Turnips" have been so conspicuous and so decided, that it has been emphatically said, "no man ever deserved better of his country than he who first introduced the Cultivation of them."

To an illustrious ancestor of your Lordship, the County of Norfolk is so much indebted for the numerous benefits resulting from a due attention to so valuable a Vegetable, that amongst her FARMERS, when "Turnips" are the subject of their conversation, his name is recollected with a considerable degree of lively gratitude; and they are pleasingly reminded, that "they were first instructed in the

“ *CULTURE and the USE of them by the precept
and example of a TOWNSHEND.*”

It has been my good fortune to hit upon a discovery which has been deemed a very material and important IMPROVEMENT in the management of the Turnip Crop; of which Improvement it is, in part, the business of the following pages to render an account.

I am indeed aware that it is not usual, generally, to prefix a dedicatory address to a performance of this nature, but in the present instance I shall be justified by the peculiar reference of my labours--- my apology must be found in the subject of my book: and I must be allowed to say, that I should consider myself as taking an unwarrantable liberty with your Lordship, and as guilty of a kind of Agricultural high treason towards the PUBLIC, in laying before it any “ Account of Experiments relative to Turnips,” if I had dared to do it without being solicitous to usher it abroad under the honorable sanction of your Lordship’s name.

But, my Lord, under the protection of a Nobleman so much and so deservedly respected as your Lordship; under the auspices of a TOWNSHEND I shall feel a confidence which I could not derive from any other source; I shall feel a confidence, that if it is so favorably fostered, I may lay aside all parental apprehension for the welfare of my favorite Child; I shall feel a confidence that ENGLISHMEN will commend my choosing for its PATRON a Nobleman who has passed a long and an active life in public situations of high responsibility, and who is now "a beloved veteran in the service of his country;" and that under such protection it will with them find countenance and favour.

But if it should be so fortunate as to travel to the Sister Kingdom I shall feel a confidence, arising from that annual and perpetual tribute of respect there offered to your Lordship for blessings conferred on Her, that amongst IRISHMEN it will be most flatteringly caressed, and that it will find in your Lordship's name an unfailing passport to public approbation and esteem.

And, my Lord, in addition to these considerations I am unwilling to let slip this opportunity of saying in the most public manner that I can, how very sensible I remain of some favors which your Lordship has condescended to confer on me, of declaring my unfeigned gratitude to a Nobleman who can

"Do good by stealth and blush to find it fame,"

and of assuring your Lordship that I am, with every possible sentiment of regard,

MY LORD,

Your Lordship's most devoted,

And obedient humble Servant,

Thomas Crowe Munnings.

Prefatory Observations.



AGRICULTURE may truly be regarded as “an ancient, a “useful, and most necessary Art,” which furnishes to the pursuers of it inexhaustible sources of rational entertainment; which has contributed from the earliest ages, and still continues to contribute, to the very *existence* of the great bulk of mankind: it may therefore be considered as a DUTY incumbent upon every individual engaged in the prosecution of it, either for amusement or for profit, to make a public communication of whatever the results of fairly-conducted Experiments may satisfactorily demonstrate to be an IMPROVEMENT in any *operative* process of so *popular* a science.

It is with a full conviction of such a DUTY, and with a firm persuasion of my being about to make known “an IMPROVEMENT in the management of TURNIPS,” that I presume to offer the following pages to the candid consideration of *practical* Farmers; and engage in an attempt to detail to them what the uniform results of many experiments have warranted for TRUTH.—I would, however, apprise them that it is *only* “in the management of TURNIPS” they are to look for *novelty*: in what relates to UNDER-DRAINING, to WATER-MEADOWS, and to *inferior* matters, I have written from observation on the works of others, *not* from my *own* experience. If I have written with warmth I would say I have written from my *feelings*—from a due sense of the general importance of every branch of AGRICULTURE; and that I wish those who have *no feeling* and *no such* sense not to engage in the perusal of my book: it is not intended for those, “whose charity is of so “*domestic* a kind that it *never* stirs from home,” and whose

ideas are absorbed in *selfish* considerations: it is not intended for those

“ whose icy blood,
 “ Feeling no warmth which *social* Love imparts,
 “ Creeps, dully circling round their *torpid* HEARTS.”

It is intended rather to egg on those who can feel an animating pleasure in *experimenting* what *may* be of service to MANKIND; who engage in undertakings of *such* a tendency with all the ardor of philanthropy; who want not the goading stimulus of *self-interest* to urge them on their course; to whom it is a sufficient gratification

“ To know the luxury of doing good.”

And I would fain flatter myself that the plain SINCERITY with which it is penned, will induce *such* men to read it with serious attention, and will insure to me that approbation about which I am solicitous—the approbation of “ the wise, the virtuous, “ and the good,” the only approbation which I feel an anxiety to merit and to obtain.

An Account

OF SOME

EXPERIMENTS, &c.

IN drawing up an account of my experiments which have been attended with such signal success, both in *the comparative cultivation of* TURNIPS and in *the protection of* the same upon the land where they are grown, I am acting in compliance with the wishes and the solicitations of many experienced Agriculturists, who have been eye-witnesses of the effects of those experiments, and who, taking a comprehensive view of the many public and lasting advantages which would inevitably result from a general adoption of my system in the management of *turnips*, have urged me to the undertaking of laying before the *practical farmers* of this country, a concise but clear and regular detail of my proceedings.

It would, I think, be difficult for any man to avoid complying with so patriotic, so philanthropic a request; and I will not conceal, that in executing such a task, I shall not only gratify my ambition of adding to the stock of *agricultural* knowledge, but shall experience a pleasure which will materially lessen the labour of the same.

But before I proceed to a circumstantial and minute detail of my successful experiments, I hope I shall not be considered as impertinent, if I presume to offer to the candid consideration of the public a few “*miscellaneous observations on agricultural subjects*,” which have been made whilst my mind was devoted to watching their progress, nor regarded as obtrusive, if I endeavor to enforce attention to the grand pillars on which the towering edifice which modern agriculturists would erect, must infallibly depend for durable support.

Few people, I believe, will dispute but that “what is most important and necessary to be done, should ever be done first;” or that if the superstructure be designed to be lasting, all due attention should be paid to the solidity of its foundation.

In applying this remark to the agriculture of this kingdom at large, I would say, that the full

benefit of its cultivation cannot be had before we have obtained a general and complete drainage of its *surface*, and that UNDER-DRAINING may for that reason be regarded as "the corner stone," of which all farmers occupying land, which requires and admits of it, should make choice to give stability to their future edifice. On such lands the improvement will be immediate, and for years progressive; on such lands the farmer will not only be amply repaid for his skill and industry, but public benefit will almost immediately result from his exertions, by a more abundant production of the common necessities of life. I could here enumerate many instances, in which by the operation of UNDER-DRAINING, "barrenness has been converted into fertility," and the beneficial effects have been so striking, as nearly to exceed the bounds of credibility.

Considering, therefore. UNDER-DRAINING as the most eminently advantageous of all agricultural *improvements*, it is my decided opinion, that all possible encouragement should be given by every community to such of its members as engage in the execution of it with spirit and with skill.

It may not, I think, be irrelative to the present subject, to advert particularly to the well-

directed efforts of a gentleman in the neighbourhood of EAST DEREHAM, who has, perhaps, done *more* of this work than any other individual; who, in the course of a very few years, has completely changed the face of an extensive *heavy-land* farm, and produced, principally by means of UNDER-DRAINING, one of the most sudden, and, I believe, one of the most lasting improvements in the county of Norfolk.

At Michaelmas, 1795, Mr. Salter, of Winburgh, entered upon the occupation of more than eight hundred acres of *heavy* land, which had been so entirely neglected by his predecessor, as to be, almost altogether, what it ought *not* to have been.

Mr. Salter immediately saw that unless he could get rid of the *surface water*, all his labour must be fruitless, and his money expended in vain; he, therefore, began his operations by cutting 342 rods (of 7 yards to the rod) of river, through the centre of the farm, 7 feet wide and 6 feet deep *perpendicularly*, in order to obtain an outlet for the water which was to flow from his other works—he cut 2937 rods of new and old ditches, 6 feet wide and 5 feet deep *perpendicularly*—1116 rods of *open* drains, of various widths and depths, from 4 to 5 feet

wide, and from $3\frac{1}{2}$ to $4\frac{1}{2}$ feet *deep perpendicularly*; and he cut and filled up 4871 rods of UNDER-DRAINING, of which the leading drains were 36 inches, and the feeding drains to the same 30 inches deep *perpendicularly*.—*The whole of this work was executed and completed in ONE YEAR!* Mr. Salter has continued to do a great deal every year since 95; and last year, or between Michaelmas, 1800, and Michaelmas, 1801, he executed 4423 rods of UNDER-DRAINING of widths and depths, as before expressed; and he is now going on with the spirit and the judgement of an experienced and an understanding Agriculturist.—The effect has been that on land which was so much impoverished by stagnant water, and so much inundated by land springs, as not to re-produce the seed used upon it, his crops have been abundant; and whilst Mr. Salter reaps the benefit of his judicious exertions, he may very fairly be regarded as a public benefactor. He may almost be considered as producing a new creation around him, and should be held up, by every friend to agricultural *improvements*, to the admiration and the imitation of all who have to do with heavy land, from which it is necessary to remove the surface-water. I have taken

the liberty of mentioning Mr. Salter, because I am sensible that

“ Example moves where precept fails;”

and that however highly *Farmers* may think of the justness of my theory, or lend an attentive ear to my panegyric upon UNDER-DRAINING, they will sooner be induced to set about the performance of it, by an ocular observation of Mr. Salter's practice. Of the whole of Mr. Salter's work, the most satisfactory and convincing evidence may be had, as the men who executed it are still living and employed *constantly* by him; and I feel a considerable degree of satisfaction in being able to add, that many of his neighbours, observing the beneficial effects of his labours, have “ taken a leaf from Mr. Salter's “ book,” and are so hastily becoming his zealous and successful imitators, that I have no doubt of witnessing in a few years the widespread influence of his judicious example; in consequence of which the farmers in his neighbourhood will have first become sensible and experimentally convinced of the manifold advantages of *scientific* UNDER-DRAINING. Of the *advantages* of UNDER-DRAINING, I am so convinced, that I believe I shall assert only what will be generally admitted by all who

have attended to its effects, if I say, that of *two* fields *equally* in need of such *improvement*, if one of them *be effectually under-drained* and the other *not*, the *under-drained* field will, without any assistance from *artificial* manure, produce much better and more abundant crops than the field not so improved can be made to produce by means of any artificial manure at present known of.---On the *under-drained* field, when once "laborious man had done *his* part," he might, with the fairest probability expect that "Heaven would be gracious," and that "God would give the increase;" on the field *not so improved*, unless the operation of natural causes were miraculously suspended, it could only be expected by man, that "his strength would be spent in vain."

Next to under-draining, I would direct the attention of practical Agriculturists to the superinduction of water, by an accurate and just formation of WATER MEADOWS, as the advantages to be derived, and the benefits to ensue to particular soils, by *artificially* watering the ground at certain seasons of the year, may very fairly be said to baffle calculation, and to be considered as truly inestimable. To those who are acquainted with the nature of well-constructed WATER-MEADOWS, who have witnessed the al-

most instantaneous amelioration of their herbage, the unexampled abundance of their fertility, and their sudden subjection to the will of man, it will be unnecessary to speak of their extensive advantages.---And if those who are now ignorant of such matters could immediately be made acquainted with them by being eye-witnesses of their luxuriance, to them it would appear more like enchantment, than the natural and fairly to be expected effect of the laborious and well-directed efforts of industrious mortals. I conclude, therefore, in the words of Mr. Kent, and with singular approbation of the spirit which dictated them, that “flooding
“ is truly the noblest of all *improvements*, where
“ it can be effected; and that there ought not
“ to be a single acre of land neglected, which
“ is capable of it.”

But whenever I consider the extensive tracts of land *in the county of Norfolk* which might easily be converted into WATER MEADOWS, and contemplate the amazing addition to its pasturage which such a conversion would produce, I certainly regard with a degree of patriotic indignation the apathy of those men, who, through a listless and a culpable inactivity, neglect such unfailing sources of national abundance; and I would use every effort in

my power to awaken them by an application of that most potent stimulus, SELF-INTEREST, and endeavor to convince them that any labour, any expence which they may bestow on the due formation of WATER MEADOWS, they will receive an ample compensation for, in a very short period indeed after the completion of the work.

I would here congratulate the public upon the circumstance of WATER-MEADOWS being about to find their way into Norfolk, and upon the happy confirmation which they are likely to afford of the truth of the above remark. I would congratulate the public on the fair prospect which the experience of their benefits may soon afford, of having the necessaries of life in more abundance, and of course cheaper.---I think this, because I am aware that when the eyes of the *practical* Farmers of this country are open to the feasibility of WATER-MEADOWS, and their understandings convinced of the advantages of them, they will be called upon by *interest* to engage in the formation of them. We shall then see the early vegetation of their herbage coming in aid of the *turnip crop*, at a season which has hitherto been deemed to be "the most trying part of the year." At the present moment for instance, in the beginning of

March, 1802, now the *turnips* are so generally decayed, of how vast advantage would it be to sheep masters, if they had WATER-MEADOWS to resort to for the use of their Ewes and Lambs? How many thousands of the latter might then be saved, which now the former are unable to support?

Of this every person of the slightest observation must be duly sensible, and of course conclude that such gentlemen as Mr. Galway, of Tofts, Mr. Bevan, of Riddlesworth, and Mr. Reeve, of Whiting, are most deservedly entitled to public thanks, for their laudable endeavors to convert, and for their successful efforts in converting *low lands* into WATER-MEADOWS.

They have gloriously set an example which I hope and I believe the farmers of the county of Norfolk will soon be glad to follow. They will be amply rewarded (as indeed they ought to be) for their skill and industry; and the public must of course feel the advantages of it. And for their encouragement in such works as the *forming* of *water-meadows*, the Farmers may understand from those gentlemen, but more particularly from Mr. Reeve, (who is himself a most skilful and judicious *practical* Farmer) that though *the expence* may be at first considerable, it will be very soon and most abundantly re-imbursed to them.

Such evidence should, I think, be a sufficient inducement to them to set about the work ; and if they are in need of any instructions for the due and effectual execution of it, let them take a view of the meadows of those gentlemen, and read for their further information, “ The “ Art of Floating Land,” as practised in the county of Gloucester by T. Wright, in which they will find directions so simple and so plain as cannot easily be mistaken ; and such instances of the *productiveness* of WATER-MEADOWS as will, I trust, remove all objections to the practice ; will do away the prejudices which are generally opposed to innovation, and “ will prevail upon every one who possibly “ can, to adopt this mode of improving his land.”

I am here most powerfully tempted to transcribe for their encouragement, a few pages from Mr. Wright’s book ; and I will do so, because I am convinced, from the earnestness of his recommendation of WATER-MEADOWS, that it would at all times afford him pleasure to be the cause of introducing them into *any* County.—In doing this, however, I will make choice of such a part of his work as I think will be most readily attended to ; and will, therefore, lay before the farmers of Norfolk

“ A specimen of the ADVANTAGES of Floating.”

“ On the advantages of floating, (says Mr. Wright) I hope it is no longer necessary to expatiate; but I have lately met with so pregnant an instance of its superior excellence fallen in my way, that I should by no means do justice to the subject if I withheld it from the public. It is an instance which tends to place the most engaging feature of this practice in a striking point of view, and gives to the production of *early green food* its proper weight and worth. Indeed the most valuable, and, I had almost said, the only improvements of magnitude that have of late years been made here in Agriculture, have been in the various provisions of *green food*, afforded for the necessity of winter, and for the more pressing wants of the two first months of the spring. In this series of improvements, I beg leave to class this relative art, which, though it cannot in every situation be so widely extended as the cultivation of TURNIPS, rape, cabbage, lucerne, &c. yet, where it can be fully executed, it will in no wise disgrace the relationship in which I have placed it, but will afford it *abundant aid and support*.

“ For *Floated Meadows* not only require no

“ manure from the farm-yard, but liberally
 “ encourage the plough, by affording an an-
 “ nual extra supply of manure; and although,
 “ by this practice, the farmer cannot provide
 “ *green food* for all the months of the winter,
 “ yet he can thereby considerably “ *shorten*
 “ *the wintry void*”---for in MARCH and APRIL,
 “ *which are the two most trying months to the*
 “ *farmer*, these meadows are covered with
 “ grass enough to receive any kind of stock,
 “ if the weather will permit.

“ The strong proof of the great utility of
 “ this practice, which I above allude to, is
 “ this:---Having heard that the proprietor of
 “ an old floated meadow had disposed of the
 “ produce of it, in the year 1795, in a way that
 “ was well calculated to ascertain its real va-
 “ lue, I wrote to a person who resides on the
 “ spot, requesting him to send me a particular
 “ account of the product of the meadow, and
 “ I received the following statement:---In or-
 “ der to make the most of the spring feed, the
 “ proprietor kept the grass untouched till the
 “ second day of April, from which time he let
 “ it to the neighbouring FARMERS, to be eaten
 “ off *in five weeks*, by the under-mentioned
 “ stock, at the following rates per head:---a

“ sheep 10d. per week, a cow 3s. 6d. a colt

“ 4s.—The quantity of land is eight acres.

	£.	s.	d.
“ 107 Wether Sheep one week	4	9	2
“ 8 Cows ditto - -	1	8	0
“ 4 Colts ditto - -	0	16	0
	<hr/>		
	6	13	2
	<hr/>		
			5
	<hr/>		
“ Total of 5 weeks	33	5	10
“ 3 Colts, 3 weeks to be added,	1	16	0
	<hr/>		
“ Total	35	1	10
	<hr/>		

“ After this statement, my correspondent
 “ sensible that it is this *SPRING* crop which
 “ principally claims the attention of the public,
 “ and on which I ought to lay peculiar stress
 “ in recommending the practice, dismisses the
 “ subject with saying, that the hay crop was
 “ as usual about 15 tons, and was *six weeks*
 “ in growing.

“ The above sum, it should be observed,
 “ was made by the owner of this meadow, at
 “ a time *when other grass land is “ in a dormant*
 “ *state,”* or exhibits but feeble symptoms of
 “ vegetation. He had received more than
 “ four pounds an acre for his land, when his

“ less fortunate neighbours were only looking
 “ forward to *two* future crops, in which ex-
 “ pectation he had at least an *equal* prospect
 “ with them.

“ But the reader will perhaps see the ad-
 “ vantages of this art in a still stronger light,
 “ when he is told that this meadow, which is
 “ now in the occupation of a miller, was a
 “ few years ago in the hands of a farmer, who,
 “ being at variance with the miller, was en-
 “ tirely deprived of the use of the water for a
 “ whole winter, which unfortunately was suc-
 “ ceeded by a very dry spring and summer;
 “ of course the spring feed was lost, and the
 “ whole hay crop of eight acres was only
 “ three tons.

“ Such a specimen of productiveness as the
 “ above, one would hope, will carry sufficient
 “ weight with it to turn the scale against any
 “ objections to the practice arising from a
 “ dread of *expence*, (the most powerful ene-
 “ my which the art has to contend with,) or
 “ from an aversion which many entertain to
 “ what they style cutting their lands to pieces.

“ I trust likewise that the above instance of
 “ fertility will be esteemed a proof that it is
 “ not merely *book-farming*, but is worthy the
 “ attention of real *practical* Farmers; and in

“ confirmation of this, I could adduce several
 “ instances of RENTERS of land having *profita-*
 “ *bly* expended several hundred pounds in
 “ forming WATER-MEADOWS, without any al-
 “ lowance from their landlords; than which
 “ a more clear demonstration of the great
 “ utility of FLOATING, in my opinion, cannot
 “ be given.”

Some gentlemen who have read Mr. Wright's book exclaim “ but we know of no *such* rates for *Keeping* in Norfolk:—10d. per week for sheep is *unprecedented* in Norfolk.” It is true that, in *common* years, *such* rates for *keeping* sheep would much surprise the Norfolk Farmers; but will any man now (March 27, 1802) declare that we know of no *such* rates?—I appeal to those who have used *oil-cakes*, to those who have given sheep *peas and oats*, and I am sure of being answered, that we *now* know of much *higher* rates—we know of at least 14d. per head for sheep per week. And in the face of such facts, let me ask if it be not desirable to *protect and preserve* TURNIPS, if it be not desirable to construct WATER-MEADOWS? In short, to do whatever may in future prevent the sad necessity of *such expensive keeping*, and enable the farmers to furnish a proper and re-

gular supply to our markets, with profit to themselves, and with satisfaction and advantage to the great bulk of the community?

Having spoken of a due and careful drainage of the surface of the soil, for the improvement of land in general, and of the peculiar improvement of such *pasture* as admits of being watered, I would solicit attention to the grand foundation of Norfolk Husbandry, in the management of *Arable Land*, in order to recommend most earnestly “*An assiduous CULTIVATION, and a careful PROTECTION of the TURNIP CROP.*”

“The great piece of husbandry in which Norfolk excels, (says Mr. Kent,) is in the management of TURNIPS, from which it derives an inestimable advantage; and this important crop is the great source of abundance to the country.”—It may indeed truly be looked upon as the only good and solid foundation of advantageous husbandry in this county.

But feeling as I do the truth of the above remark, and agreeing with Mr. Kent, that it is “a teasing and precarious crop admitting of no certain rules to ensure absolute success,” I would most strongly recommend a much more than ordinary care in the preparation of land intended for TURNIPS, by giving to such

land a *very deep* ploughing in the beginning of the winter, preceding their growth—this has been my constant practice, and it has (hitherto) been attended with *invariable* success;—my idea is, that by such *deep ploughing* I am more likely to furnish earth to which *Turnips* may be *new*, and my probability of a crop be consequently increased. I think too, and I am confirmed in this opinion by the unvarying success of many experiments fairly made, that it will, *at all times*, be more advantageous to DRILL Turnips, than to sow them *broad-cast*.—I think so for this reason; because *in a DRY season* the seed may be put into the land more immediately after the plough, and that, by consequence, the chance of successful and uniform vegetation will be much increased. I will here endeavor to describe the DRILL which I *invented*, of the most simple construction, and have used in the management of my *Turnips*, and it will immediately appear that my seed is regularly deposited *before the first evaporation has made its escape*—which evaporation is, even in the driest time and on the lightest lands, sufficient to occasion the almost immediate vegetation of so minute a seed. My DRILL then consists of a tin box, (about 8 inches long and 5 inches diameter in the middle,) in the shape

of a barrel, affixed to the axis of a wheel about *twenty-two* inches high, vertical with the same, and, in its evolutions dropping the seed through small apertures in the middle of the barrel, which middle is, by means of a screw, *variably* distant from the wheel from *twelve* to *fourteen* inches. With this extremely simple *and very cheap machine*, (the price about one guinea,) I begin my work by having the *tops* of my ridges set out with the common Norfolk *two-horse plough*; and when the same plough takes up the furrow next to the top, it is *immediately* followed by the DRILL, which drops the seeds upon the fresh mould *the instant it is turned up*. The person driving the DRILL (which work may be done by a boy or woman) is then followed closely by a *one-horse plough*, the overshot mould of which as quickly buries the seed, which is thus deposited in regular and very straight lines or rows, at equal distances of about *eighteen inches* apart. After it is thus sown, the land is harrowed or rolled in the same direction in which it is ploughed, and the consequence is, that my crop grows as regularly in rows as a gardener can plant cabbages.

It may here be proper to mention a few advantages which obviously attend *this method* of

drilling Turnips: In a *dry time* the seed, by being so immediately dropped upon the fresh-turned-up mould, has consequently, as has been observed, an increased probability of successful vegetation; by being buried somewhat *deeper* than in the common *broad-cast* method, it receives more moisture in its infant state, and by a more rapid growth coming sooner to the hoe, is less liable to injury from the fly, (one of its greatest enemies,) and by having, if I may so say, more hold of the earth, is better enabled to withstand the effects of a *continued drought*.

These advantages I have been induced to mention, because they were most strikingly conspicuous in my *drilled* Turnips of the year 1800; in as much as when the *broad-cast* Turnips *very generally* either failed to vegetate, or perish by drought, my *drilled* plants very uniformly grew rapidly when young, and as uniformly, over a field of 6 acres, maintained their vigor and their verdure throughout the long-continued *dry weather* which then prevailed. This experience of the efficacy of *drilling* Turnips leads me to conclude that it will, *at all times*, be more advantageous to do so than to sow them *broad-cast*. And in corroboration of such an opinion on my part, I have

the unvarying testimony of ALL who have made use of my little machine for the purpose of DRILLING *Turnips*.

But in the course of my observations on Turnips I have very frequently lamented, that when the crop was exceedingly abundant the advantages which farmers might derive from its expenditure were far from correspondent, because they make use of no means to *protect* and *preserve* the Turnips from the biting severity of a winter's frost. It would almost be superfluous to dwell upon the loss which is generally sustained, whenever it happens that the Turnips are destroyed by the fatal effects of a cutting frost: Who at such a time can pretend to calculate the extent of the mischief? Who can point out to any individual what he, *eventually*, suffers? Or who can take upon him to pronounce how far the PUBLIC is injured by a positive diminution of supply of animal food for market at the time, or by as positive a diminution of the future productions of the earth?—It seems to me almost self-evident that such BEASTS as may be nearly ready for public sale must, at such a time, be not only *incapable of improvement* from TURNIPS *only*, but for want of due nourishment from the Turnips, must either lose flesh, be carried forward with

some such *expensive* succedaneum as oil-cake, or be sent to market with less meat upon their bones, and sooner than the farmer intended. In the first case, the public must pay more than common for beef to indemnify the feeder; in the latter case, if the same money be not paid for less meat, the farmer must be equally a sufferer: he will have less *feeding manure*---he will have consequently less barley---he will have consequently artificial grasses of inferior value, and consequently a much less chance of an abundant wheat crop: so that the ill effects of a perishing Turnip crop must, in all probability, be felt seriously till the same land comes in due course for Turnips again.

Meditating, and meditating with much anxiety, upon evils of so alarming a magnitude, I could not help lamenting the want of some plan for such an *efficacious* PROTECTION and PRESERVATION of TURNIPS for *spring consumption*, as should materially counteract the wide-spreading ill-effects of such evils.

It seemed to me that in a broad-cast crop no protection could with facility be given to the Turnips whilst remaining upon the land where grown, and that it was therefore indispensibly necessary first to *drill* them. Having done *that*, I next proceeded to attempt the PROTEC-

TION and PRESERVATION of my crop from frost: And in the year 1800, I effected it by removing the *alternate* rows for *autumnal consumption*, thus leaving rows about a yard asunder, and then with a *one-horse plough* moulding up the same.

My land thus assumed the appearance of what is called *two-furrow work*, or, perhaps, more properly, *tops and balks*, each top embracing and defending a row of Turnips, and the balks being in the lines from whence the Turnips were removed:—the whole were most completely moulded up, and seemed to bid defiance to a winter's severity.

The winter, however, (most fortunately) proving very mild, it was not in my power to speak with such positive determination, as I now can; nor were the farmers much inclined to listen to my advice. We have lately had a winter of most trying keenness, and the TURNIPS, *in general*, have been nearly destroyed by the perishing severity of the frost; mine, however, have *not* been hurt, (I mean such as I defended;) and as I can afford convincing ocular demonstration that I am speaking the truth, I begin now to find an attentive audience. My plans (for I have tried several) have varied in some cases from that already spoken of;

that, however, has answered *effectually*, and all have been found so desirably and satisfactorily efficacious, that I will venture to say with confidence, that if any man will contrive to mould up his Turnips in the autumnal months, before the time most probable for severe frosts in this country, such Turnips will be so much better in the spring than Turnips which have received *no artificial* PROTECTION, as abundantly to pay him for his care, and for any *extra* labour he may think himself performing at the time. But if I might presume to point out the particular mode or method which I most approve, to which I shall in future adhere, and which I would recommend to general practice, I would endeavor to do it thus:—Suppose the following eight lines, No. 1, 2, 3, &c. to represent my rows of Turnips on a ridge—*eight* being the most convenient number of rows for the easy execution of the work.

1
2
3
4
5
6
7
8

Conceive half of these lines to be upon one ridge, and half upon another ; in that case there will be a furrow between 4 and 5---this furrow is to be opened with a *double-breasted* plough, which will raise mould for the *protection* of what I will call *the insides* of those two rows 4 and 5 ; the rows 1, 2, 3 are then to be pulled and put into the opened furrow, (between 4 and 5) with their tops inclining towards 4. In the same manner the rows 6, 7, 8 are to be pulled, and put into the same furrow, with their tops inclining towards 5. Two or three furrows are then ploughed with a *one-horse plough* to the *outsides* of 4 and 5, and some mould from the third furrow so ploughed *shovelled* unto the top of the collected rows, (of this *shovelling* I think from what I had done, that a good labourer will finish two acres in three days,) and with the one-horse plough, the ploughing may then be finished, so as to give the land a complete earth.

By this plan the whole of eight rows are collected into a small space ; and if the frost be very severe, and other Turnips (*unprotected or protected but in single rows*) be difficult of access : the land being kept *open* by the tops of 4 rows united in the lines 4 and 5, may most easily be removed from the top of them, and

the whole body of the Turnips so collected will be found *un-frozen*. From Turnips *thus* defended, I sent specimens of *un-frozen* roots and very *lively tops* to many gentlemen and farmers during the most severe days of the frosts of the winter just past, at a time when other Turnips, *not protected*, were *as hard as stones*. I sent specimens to many market rooms of farmers, to shew from time to time the validity of my plan. And from beds of Turnips *thus* defended, I have no hesitation in saying, that one man may with ease feed more stock with *sound un-injured food* than five men possibly can from any crop of *broad-cast unprotected* Turnips.

I would, therefore, most seriously recommend to every Turnip-grower attentively to consider this plan, and to well weigh the advantages which he may derive from the adoption of it, "*in a certain proportion of his crop*," which may, in all probability, be wanted for consumption during the extreme severity of the winter: How much labor will then be shortened in supplying them with food. How much more nutritive and wholesome such *unfrozen* food must necessarily be, than the indurated Turnips of men less provident than himself. How much, supposing him a sheep

master, his flocks must have advantage over those of men who can, who *must* allow,

————— “ The bleating kind
 “ Eye the bleak Heaven, and next the glistening Earth,
 “ With looks of dumb despair ; then sad dispers’d,
 “ Dig for the withered herb thro’ heaps of snow :”

Whereas *he*, by such precaution, such *protection* of his Turnips as I have here pressed him to practice, may

“ When Winter bids his *driving* s’cets
 “ Deform the day delightless, —————
 “ ———— to *his* helpless charge be kind ;
 “ Baffle the raging year, and fill their pens
 “ With food at will.”

By such means *his* flocks may keep progressively improving, when those of other men will be more than *commonly* fortunate if they be not made worse by the lasting inclemency of winter.

His advantages, however, do not *end* here, as not only his flocks but his LAND will feel the good effects of such management—he will find

“ *his* frost concocted glebe
 “ Draw in abundant vegetable soul,
 “ And gather vigor for the coming year.”

This I consider as a most desirable, and very decided advantage, if the winter be *uncommonly* severe ; but I am not less partial to it in case

of a *mild* winter and a *very forward* spring.— In such a case do not *the* FARMERS very commonly complain of the injury which the land sustains from being exhausted by the luxuriant vernal vegetation of the Turnips, and is not the fatal effect of such exhaustion frequently too visible in the succeeding crops of corn and grass?

Of crops grown in the same field; one on land from which the Turnips were fed off with sheep and bullocks *in the early part of the year*; and the other, on land which was much exhausted by an exuberant spring vegetation of the Turnips (though the whole field was well manured for them), I knew an instance of a difference of more than ten coombs of barley per acre, and of more than one-half in the produce of hay, in the year following!

Advert now for a moment to what may happen where my plan is adopted. The land receives one earth in the autumnal months (I will say some time in November), before the frosts set in with destructive severity, and 3 parts out of 4 of the growing crops are removed from their native beds and deposited in trenches, continue for some length of time in "*a state of suspended vegetation.*" The surface therefore which is then turned up will be

ameliorated by the frosts between that time and the early part of the spring, when (if the weather permit) the land may be ploughed back again from the trenches, and reap the advantages of a second ploughing in preparation for the following crop of corn;—the Turnips may *now*, after this second earth, be easily scattered about the land, and it may be enriched with the whole of the *feeding manure*.

By this process I contend, that as the two earths may fairly be reckoned *necessary* in the preparation for corn, *the* EXPENCE of them ought *not* to be taken into the account of *the* PROTECTED Turnips; and that the benefit which the land receives from those two ploughings at such times, added to the circumstance of the Turnips (*viz.* 3 parts out of 4 of them) being removed from it so early in the season, as the month of November, much more than compensates to the farmer for the labor of the man who *shovels* the mould over them.

Thus then we have discovered a way far superior to any one hitherto practised for *the* PROTECTION of *Turnips upon the land where grown*, and which so far from being accompanied with EXPENCE, must be allowed by every candid person to be attended with indisputable facility

in the execution, and with obvious and manifold advantages in the result of it.

In the method which I have here described, it may however be observed, that I refer, more particularly, to light and mixed-soil land; but where the land is *heavy* and subject to much wet, in the winter season, I would strenuously advise to have trenches opened *on the tops* of the respective ridges, and the rows growing on the sides to be put in as before directed.—This procedure will have the effect of elevating the tops of the ridges, or of what is called *up-ridging* the land, in order to its being kept dry and advantageously receiving the influence of the winter's frost. But I have been told by some farmers, that there are many parts of the county of Norfolk *so heavy* and *so wet*, (I believe Mr. Salter's UNDER-DRAINING would cure them,) that on them my plans for the protection of Turnips must be *impracticable*. If this idea be a just one, I can only say, that I feel a degree of commiseration for the occupiers of so ungenial a soil. But if they are timid, if they

“*Make the impossibility they fear,*”

I would rouse them to exertion, by reminding them, that

“*Those can conquer who believe they can,*”

would urge them to the attempt, and, in case

of disappointment, console them with the reflection, that

“ In great attempts 'tis glorious e'en to fail.”

They should recollect too, that to encounter difficulties is the unavoidable lot of man, who is doomed to till the earth, and

“ In the sweat of his face to eat bread.”

They should recollect, that it never was supposed that a farmer's life was to be *altogether* a life of pleasure and of ease:

————— “ Pater ipse colendi

“ Haud *facilem* esse viam voluit primusque per artem

“ Movit Agros; *curis* acuens mortalia Corda.”

It is not required of them to perform impossibilities, but they should not be torpid and inactive from the fear of fancied difficulty.

These considerations should teach them, that in proportion as they struggle to surmount obstacles which nature seems to have opposed to their exertions, in the same proportion, will they deserve success; and that in proportion as they are successful, in the same proportion will they merit the approbation and applause of those for whose benefit their labours are intended.

It has been objected by some that my *drill* is *not* calculated, that it has not *powers* to do business *on a large scale*; this seems to me like objecting to a pigmy, that he has *not* the

powers of a giant,---but I believe it will do business on a scale sufficiently large to answer every good purpose, and I only desire to have it used *according to its powers*---“*valeat quantum valere potest*”---and I shall be satisfied.

But, if by means of my machine (which is an *improvement* of the Scotch Barrow), a *little* farmer is enabled to do *his* business with *neatness*, and with *fewer* HORSES than have commonly been used, and if he can sow, either his CORN or his TURNIPS, *as fast as his land is ploughed*, would not the man be thought unreasonable who would wish for more? Do not even LARGE FARMERS plough their lands *before* they drill them? and as large farmers may use, even for *Turnips*, a *drill* which will work to 5 or 6 ploughs, I would only urge *them* to *protect* their TURNIPS “in proportion to their respective farms,” and then every man will, in my opinion, do the business (which I would by no means have *undone*), “upon the *best* of all possible scales”---he will do neither do too little nor too much. And I am sure that every man who may be prevailed upon to do any, will be so satisfied of the easy practicability, and the ultimate benefit of *protecting Turnips* according to my directions, that he will consider me as entitled to his thanks, and as having “*deserved well of my COUNTRY.*”

I am, however, unwilling to dismiss my DRILL without saying a little more about its powers, and endeavouring to place its "*intrusive abilities*" in the fairest point of view: Let us then bring my *little* drill—the drill of the *little* farmer, into equitable competition with the *great* drill—the drill of the *great* farmer; let us examine the work done by each, and bring them both to that most decisive of all comparisons, the comparison of *expen*ce. As to the prime cost of my Drill for Turnips, only one guinea; to sow Turnips and all kinds of grain it will cost two guineas—six of them, therefore, will cost only twelve guineas. The prime cost of most of the great Drills which I have seen has been *more* than twenty guineas:—But suppose twenty guineas only to purchase such a drill, with all its necessary apparatus, it will then require to work it, one or two HORSES and two men, or at least a man and boy—one must lead the horse and the other guide the drill. And previous to its use, the land must be duly prepared; it will cover only the same breadth of land whatever may be the distance of the rows drilled; and it may perhaps (generally speaking) be worked to about six ploughs. Six of my *little* drills, and worked by six boys or women, will likewise work to six ploughs, and drill the land



“ *as fast as it is ploughed.*” In calculating the expence of the work, I will say, let the horse be put down at 1s. 6d. per day, the man at 2s. and the boy at 8d. and suppose them to drill 6 acres in the day, the amount of their labour will be 4s. 2d. The amount of the labour of 6 boys or women, at 8d. each, will be 4s. only, and *the horse will not be taken from other work.* This calculation is made upon the supposition that *every* furrow is *drilled* with some sort of grain; but if TURNIPS are to be drilled at two furrows apart, then *three* only of my drills will do as much work as the *great* drill, and *three* boys or women only will be to be paid: thus *reducing* the expence of 6 acres from 4s. to two, whereas the labour of the people who work the great drill must be the *same*. It is too worthy of consideration, that any accident happening to the great drill puts at once a stop to the whole work; whereas an accident happening to any one of my drills, (and their extreme simplicity *diminishes* the probability of accidents,) is of trifling consequence indeed; as in case of drilling *Turnips*, others are at liberty to be used in its stead; and if such accident happen when grain is drilling, *one-sixth part only* of the work is thereby interrupted.

In another point of view too I would wish



to consider my drill, and explain how the quantity of seed used per acre may be adjusted. It is not a matter of information to any farmer to be told, that if the furrow be of nine inches the plough goes over eleven miles, or 19,360 yards, in ploughing an acre of land; if therefore in drilling, at the distance of nine inches from row to row, he would wish to use 4 bushels of seed per acre, half a pint of seed must drill something more than 37 yards; if to use only 3 bushels per acre, half a pint of seed must drill something more than 50 yards: and in drilling *Turnips*, if a quarter of an ounce of seed be used for 50 yards, 3 pounds of seed will drill an acre, in rows 18 inches asunder.

Thus it seems to me to be a matter of perfect ease, by a very few trials indeed, to regulate the quantity of seed in a manner consonant to the wishes of the farmer who uses the machine.

And I trust it will be regarded as some advantage, *economically* considered, that the labour of the horse is dispensed with, and would furnish employment and the means of earning a livelihood to numbers, for whom, without some such employment, we must otherwise *expensively* provide. Such I conceive are the *advantages* of THE LITTLE *Drill*: and till I can

believe, that it will not fully answer the expectations of all who will, without prejudice, give it a fair trial, I shall continue to think favorably of its *peculiar* and *superior* POWERS.

If it should be conjectured from any observation which may have escaped me, that I am inimical to large farms, I beg leave to say explicitly, that I am fearful of our too much doing away the “little and moderate sized” farms, which operate as a spur to the industry of the *labourer*, by the flattering hope that he or his son may, by their own exertions, become farmers;” and that I would most earnestly wish to see a *regular gradation* of farms, from those only sufficient for the keep of a cow (the poor man’s first ambition) to farms as large as may be thought consistent with the welfare of the community.

In the foregoing pages I have earnestly insisted upon what I consider as the indispensable requisites of all good and advantageous husbandry: in what relates to UNDER-DRAINING and to WATER-MEADOWS, I have endeavored to illustrate and enforce my arguments by reference to the best examples of their efficacy which this county, *at present*, affords: and that what I have said concerning “*drilling and protecting of TURNIPS*,” may not be taken for

granted upon the mere "ipse dixit" of an individual, I will now proceed to a more regular account of my experiments; which I shall presume to lay before the public in the off-hand unstudied simplicity of *Memorandums*, made at the time these experiments were carrying into execution; and shall confirm the results of them by such a weight of most respectable evidence as I flatter myself will convince the most incredulous, and satisfy them that what I have stated to be practicable, all who please may practice.

Memorandums

OF

Turnips drilled & sown broad-cast.

1801.

No. I. *June 1st, 1801.*—Two ridges, of a field consisting of five acres, of a very bad quality, and very gravelly, which had *not* received any manure *for three years*, but had been ploughed *very deep* in the winter of 1800, were sown *broad-cast*.

July 4th.—These two ridges were hoed.

21st.—Second hoed the same; which are vegetating very well, and looking at this time

forwarder than any Turnips in this neighbourhood.

28th.—Suffering from the depredations of black grubs and wire worms: but the uninjured plants growing with great vigor.

Nov. 27th.—At this time evidently the worst Turnips in the whole field.

No. II. June 14th, 1801.—Three ridges, in the same field, were *drilled*; 2 on every furrow *immediately after the plough*, and one between the above two *drilled*; two furrows out of three after the land was *dry*, and there was every appearance of continued drought.

July 22d.—The Turnips on the intermediate ridge above spoken of extremely *thin* and *faint*, compared with the other two ridges.—All indeed have suffered from *the fly*; but I consider this as a strong proof of the *great advantage* of sowing before the vegetative power of *the first evaporation* is gone off.

24th.—Obliged to cut up every other row of the two ridges which were *drilled on every furrow*, as the men could not *hoe* them, because the *drills* were *too close*.

28th.—The two ridges which have been looking promisingly—the plants on the intermediate ridge failing very much, and not likely to be *half* a crop.

November 27th.—The Turnips on the two ridges a very fair crop indeed, considering the quality and condition of the land; those on the *intermediate* ridge though *thin*, compensating very nearly in size for their want of numbers.

No. III. *June 16th, 1801.*—Two ridges, in the same field, were *drilled*, and two ridges sown *broad-cast*, as soon after the plough as possible.

July 18th.—Hoed the two ridges of *drilled*, which were *immediately forwarder* than the *broad-cast* ridges, and even than the Turnips put into the ground on the 14th of June—(see No. II.).

N. B. *These two ridges were managed (with a two-horse and a one-horse plough,) exactly as my crop was in 1802.*

28th.—The two ridges above spoken of continuing to look well and gaining fast upon the *early sown broad-cast*—(see No. I.).

August 5th.—The ground almost invisible on these two ridges, and the rapid growth of the plants truly surprising.

November 24th.—By means of a *narrow-set double-breasted* plough (driven between the rows) these Turnips were completely moulded up.

February 4th, 1802.—These Turnips were fed off with sheep and cows, and as the cover-

ing of mould was very *thin*, and the frosts very *severe*, they were *somewhat* though not *materially* damaged.

No. IV. *June 25th and 26th, 1801.*—On these two days (the dry weather still continuing) the remainder of the 5-acre field was *alternately* drilled and sown broad-cast, as the different ridges were ploughed.

July 20th.—Examined the above young plants, and was much struck with the *uniform superiority* and *greater forwardness* of the *drilled* ridges; all of which were drilled on the *alternate* furrows, after the method which I practised in 1800.

28th.—Part of the *above drilled* plants *hoed*, and the remainder coming on very fast.

August 1st.—Continued to *hoe* such parts of the field as produced the forwardest plants; the general appearance of the same been very promising for a fair crop.

8th.—*Second-hoed* various parts of this field: a violent hail storm had injured and retarded the growth of the plants in many places.

November 27th.—On looking over the whole of these Turnips, the superiority of the drilled was sufficiently striking to be admitted as a decisive proof in its favor when compared with the broad-cast.

January 29th, 1802.—Such of these Turnips as remain unconsumed by stock, and have *not* been *protected*, are now so much injured and so much decayed, in consequence of the severe frosts, as not to afford any thing like *half* the food which there was of them in Nov. 1801.

No. V. *July 3d, 1801.*—On the upper part of this field of 5 acres, about a rood of land was left unsown till this day; it was put into *two-furrow* work; the intervals were well manured, 4 bushels of quick-lime were strewed upon the manure, a strip of mould was ploughed from one side of the two-furrow work upon the same, the Turnips were *drilled*, a strip of mould ploughed from the other side of the work buried the seeds, and the land was harrowed *level*.

10th.—Up and looking well.

20th.—Vegetating *rapidly*.

25th.—Continuing to grow vigorously.

31st.—Hoed the above, and if a judgment may be formed from the present appearance of the plants, the crop will be abundant.

August 3d.—Wrote to Mr. C. Taylor, Secretary to “The Society of Arts,” &c. &c. respecting the intention and wish of the Society in their premium for “The comparative Culture of Turnips,” the same being so worded

as to occasion a doubt if the Society *at all* admitted *drilled* Turnips to be *hand-hoed*.

3th.—Not having heard from Mr. Taylor, I ventured to hoe these Turnips *a second* time: the rapid growth and general appearance of them corresponding with my warmest wishes.

September 21st.—Received a letter, as Mr. Taylor was absent from London, from a member of “The Society of Arts,” stating that both *drilled* and *broad-cast* Turnips might be managed at the will of the Cultivator; the Society wishing only to ascertain which was the preferable mode of growing Turnips upon land of the same quality, and under the direction of the scientific Farmers.

November 17th.—Moulded up the above Turnips by means of a *single-horse plough*, after the manner of my last-year’s plan:—Ploughing up on one side of a row and down on the other, so that the two furrows completely embraced the Turnips; and as these plants were further asunder than in my general crop, the *alternate* rows were *not* first pulled away.

N. B. I saw no rood of Turnips which were, *upon an average*, so large as these.

February 9th, 1802.—At this time feeding off with stock, and remaining very *sound* indeed.

No. VI. July 17th, 1801.—*Drilled* some

ridges of Turnips on a bottom of *black gravel*, allowing the same a fair coat of manure.— This day's work, on the plan of 1800 only, the ridges adjusted to receive no more than *eight* rows of plants; the furrows well opened on account of wet.

18th.—Attempted to *drill* some Turnips on that kind of work which Farmers call *back-furrowing*; some on *tops* and *balks*, and some *broad-cast*—the land manured as above.

N. B. These *two* pieces, being together about five roods of land, were useless to former occupiers; they have been *almost* completely UNDER-DRAINED, and had about 30 loads of clay 3 years since; they were ploughed *very deep*, though with such labour that more than *SEVEN* loads of stones, so large as to obstruct the plough, were *picked* out by a man who attended the plough-man for that purpose.

The Turnips were drilled *experimentally*.

August 10th.—Hoed the first sown part of this field.

14th.—Went on with the hoeing, and cut up weeds in the intermediate spaces; the whole of the plants doing as well as I could wish.

November 27th.—The greater part of these Turnips were moulded up, *in various ways*, by three men and a boy.

28th.—The moulding up finished by two men.

January 29th, 1802.—Between Nov. 28th, 1801, and the present time, these Turnips have been examined and *uniformly* approved by many gentlemen and farmers; some preferring the method of last year, and others giving the preference to the last invented method (which I have so minutely described in the foregoing chapter;) in which three parts out of four of the Turnips have remained since Nov. 28th, 1801, in a state of suspended vegetation, and are *now* perfectly sound.

February 12th.—Mr. Coke and the Rev. Dixon Hoste, examined these Turnips and expressed much satisfaction at the same.

26th.—The Committee appointed by the “West Norfolk Agricultural Society” to examine and report concerning my *drilled* and *protected* Turnips, took a view of these, and their certificate will make known their opinion of them.

March 15th.—These Turnips are at the present moment as *sound* as they were in Nov. last, *having never been frozen!!*

No. VII. July 21st, 1801.—Began this day to *drill* four acres and an half of land with

Wheat and Turnips; drilling two rows of Wheat and then one of Turnips, so as to have the Turnips in *equidistant* rows, about 27 inches apart. The land manured with about eleven loads of muck per acre—the quality of the same light upon a gravel.

N. B. This experiment is intended to ascertain, if it be advantageous, on light *scalding* land to sow WHEAT very early, and by intermixing it with any vegetable, such as Turnips or Cole, and feeding off the same with sheep in the beginning of winter, to increase thereby the luxuriance of spring vegetation, and by consequence to lessen the bad effects of the summer's drought.

23d.---Finished *drilling* this field.

24th.---The ends and headlands ploughed, and sown *broad-cast* with Turnips.

August 3d.---The whole of the Wheat and Turnips up, and looking extremely well---the work better executed than I supposed.

14th.---The land was *cross-harrowed* once in a place, as, in consequence of a very heavy storm, the same was *too hard* to be hoed.

21st and following days hoed the above.

30th.---Turned into this field fifty lambs, which remained daily in the same till the 5th

of Sept. when they had eaten the Wheat so close that they began to bite the Turnips.

November 25th.---As the *Wheat* was completely killed by being fed down, I determined to protect my Turnips, and this day began to mould them up by means of the same narrowest double-breasted plough spoken of in No. III. which was followed by one with *expanding* breasts, and the Turnips very neatly buried.---The ploughs were each drawn by one horse only.

January 29th, 1802.---This crop has been looked at and examined by many *experienced* farmers, and from the *protection* afforded to it by means of the above work, and the present perfect soundness of the Turnips, has been deemed to be now better than any *full* crop in the neighbourhood, which has *not* been *protected*.

The certificate of the Committee of "The West Norfolk Agricultural Society" refers to these Turnips, as well as to those spoken of in No. VI.

No. VIII. *June 23d and 24th, 1801.*---On these two days I was permitted by Mr. Coke, to exhibit and to explain *practically* to the company assembled at Holkham, the nature and

use of my machine. The quality of the land *gravelly*, but considered as very kind for Turnips; pond-weeds were used as manure, and some Turnips, which had been *drilled* with an horse machine (I believe Cook's), made a very healthy appearance.

On the first day I drilled some Turnips *on every furrow*, some on *alternate* furrows, and some on *every third* furrow.

On the second day I pursued my last year's plan of sowing *every other furrow*, and using a *two-horse* and a *one-horse* plough, the land was this day manured with *cinder dust*; and to shew the powers of my little machine I sowed some oats *at the same time*: it should here be understood, that the tin box used by me for sowing Turnips was connected with my barrow for sowing various kinds of grain, but that divested of the seed-box for corn, it is exactly the simple *drill* which I have described.

July 14th.—Mr. Coke, and several other gentlemen, told me that my Turnips were *drilled* in a masterly manner, looked as well as possible, and that the rapid growth of the oats was really wonderful.

N. B. The Turnips drilled *on every furrow* were so done to convince the advocates for it, that *such* plants would be *too close*, those on

alternate furrows to point out what I considered as the best distance for a crop; those on every *third* furrow to shew that what might be gained in *size* of single Turnips, would *not* be equal in weight to the deficiency from not *drilling* closer.—And those *drilled* on the 2d day (as my *own* crop was last year) were so done to *prove*, *experimentally*, the decided superiority of my management of Turnips—fully expecting that in 1802 Mr. Coke will confirm what I have here judged will eventually happen.

February 12th, 1802.—Yesterday at the Meeting of the West Norfolk Agricultural Society, Mr. Coke did me the honor of declaring that my conjectures, relative to the Turnips at Holkham, were perfectly correct, and that those *drilled* on my last year's plan were very evidently *superior* to Turnips on either side of them, sown on the same day.

On the 30th of January, 1802, I sent some Turnips to Norwich, to which I solicited attention by the following public Notice, at the entrance of the Market Hall, in which some hundreds of Farmers were gathered together.

“ The FARMERS assembled in St. Andrew's Hall to-day, (Jan. 30th, 1802) are requested to pay *particular attention* to the contents

" of an hamper, which will be opened for their
 " inspection at ONE o'clock."

At the hour appolinted the hamper was opened, and I was favored with the following certificate relative to its contents:

We, whose names are under-written, hereby certify, that the Rev. T. C. Mannings hath this day (Jan. 30, 1802) exhibited in the Market Hall, at Norwich, a parcel of TURNIPS, which have been effectually *preserved* by him from the severity of the late frosts.

NAMES.	RESIDENCE.
JOHN CULLEY,	Ringland
JOHN DANIEL,	Dillington
I. D. COPLAND,	Saxthorpe
C. C. GILMAN,	North Tuddenham
R. GILMAN,	Snettisham
PETER FOSTER,	Great Witchingham
WILLIAM HOOK,	Bintry
JOHN BROWNE,	Norwich
JOHN S. CANN,	Wymondham
THOMAS LEEDS,	Reepham
COLLISON NEALE,	Worthing
JOHN PATTESON,	Norwich.

I would here pause to remark on what some people have been pleased to say about *one* of my *protected* Turnips which proved to be *unsound*, which was therefore triumphantly treat-

ed with ridicule, and regarded as “damning
“ the doctrine I was preaching.”

I confess that of the number which the hamper contained (I believe about forty) ONE Turnip *was* unsound. I confess too, that I was *not* aware of the hamper containing *one unsound* Turnip; but if I had, as I intended only to produce a FAIR *sample* of my crop (viz. of my *protected* Turnips) that very Turnip would I have produced, and producing it, would have have exclaimed, see here the excellence, the efficacy of my plan! I have arrested the *natural* progress of decay, and I have to this day (Jan. 30th, 1802) preserved every particle of this Turnip, which was sound in the month of Nov. 1801: and I would have said this, because I was addressing FARMERS whom I should have supposed not *unable* to distinguish between the *external* effects of frost and the *internal* defects of nature.---The Turnip which I produced had a *lively top*, a *rind*, perfectly *bright* and *clear*; it was cracked on the side, I believe from being cut with the hoe in its infant state, but it had no outward symptoms of decay;---would such, I ask, have been the case with any Turnip which had received injury from frost, the ill effects of which my pretended protection had been unable to

prevent? I believe, I shall readily be answered, certainly not. Is it not then a little *unfair*, is it not *unmanly* in any one to lay to the charge of my protection, *the natural internal decay* of such Turnips, as if they had *not* been protected, the severity of the late frosts must have entirely annihilated?

I anticipate the answer which I may expect from candor, which is liberally disposed to "speak of things as they *are*, which extenuates "*nothing*, nor sets down aught in *malice*;" and I am only anxious to do away such *misrepresentation* as may arise from those who advert not to the maxim "second thoughts are best," who are too apt to speak *without* thinking *twice*, and very likely to *impose* on numbers who never *think* at all.

But whatever may be said by some men, who are invincibly stupid or most wilfully perverse, who are decidedly hostile to all *improvement*, and who would "follow their "grand-fathers even where they *know* them "to be *wrong*," I am perfectly satisfied with the authority which the foregoing certificate will carry with it, and with the convincing influence which it will have upon the *rational* part of mankind.

"I hereby declare and certify, that in conse-

quence of seeing the Turnip Crop of the Rev. T. C. Munnings, (in the spring of 1801) I have since made various experiments upon *drilled* and *broad-cast* Turnips—drilling and sowing *alternately* as the land came in course; and that it is my decided opinion, that my *drilled* Turnips were, in every instance, superior to my broad-cast; that they came sooner to the hoe; attained *very visibly* a larger size;—that I have no doubt of their weighing more, on any given quantity of land; and I therefore conclude, that it will always be *more advantageous* to drill Turnips than to sow them *broad-cast*.

ROBERT HART.”

BILLINGFORD, FEB. 24, 1802.

Mr. Hart is a very respectable tenant of T. W. Coke, Esq. accurate in the institution of experiments, and attentive to the progress of them—he is therefore peculiarly entitled to public attention; and he has already been a public benefactor, by giving rise to the cultivation of a *peculiar species of wheat*, which is known by the name of Hart's wheat.

“ It will be remembered by the Society of Arts, &c. that amongst the certificates from the Rev. T. C. Munnings, relative to *drilling* Turnips in the spring of 1801, there was one

from me, in which I said, that I would *drill* 70 acres of *heavy* land.---I have done so, and though my Turnip crop has failed very much from various causes, I cannot include *drilling* in the number of them, as those Turnips which were the *best* upon my farm were *drilled* after Mr. Munning's plan, and which, if they had not been *drilled*, I could *not* have hoed, for the abundance of *Charlock* which the land produced.---I therefore beg leave again to certify to the Society of Arts my decided opinion in favor of *drilling* Turnips.

WILLIAM SALTER,

Winburgh, near Dereham."

FEB. 23, 1802.

Mr. Salter is the gentleman whose very beneficial exertions, as an UNDER-DRAINER of *heavy* land, I have mentioned in the foregoing pages:---He is a farmer of so much intelligence, and of so much *practical* information, that in all agricultural matters I know of no man on whose judgment I should more satisfactorily depend.

" It has, for some seasons past, been a practice with me to endeavor to grow my Turnips in *straight* lines;---in the winter of 1800, and the spring of 1801, I *attempted* to *protect* some

parts of my crop by ploughing mould over them, and I, *in part*, succeeded; but hearing of the plans of the Rev. T. C. Munnings, for *drilling* and *protecting his* Turnips, I visited him, approving of his methods I solicited his assistance, used for *drilling* my Turnips a machine of his *contriving*, and having this year, 1802, been, in consequence, enabled *more effectually* to *mould up* my Turnips, (more than 40 acres, which are now *sound*,) I think it but justice to Mr. Munnings to certify the same, and to say that I consider my crop, at present, better by at least £.100 than it would have been if *not so protected*.

JAMES BLOMFIELD."

BILLINGFORD, FEB. 25, 1801.

I have been told that the method of sowing and *earthing up* Turnips, as practised by this gentleman, is of some standing in the county of Northumberland; in that county, I believe, the land is prepared and manured as Mr. Blomfield does his, (*viz.* it is ploughed into two-furrow work, and the intervals *only* manured,) but the Northumberland *drill* requires a man and HORSE to work it. Mr. Blomfield's *drill* is worked by a boy, and the labour of the horse is thereby saved.

Mr. Blomfield too was in the habit of *pre-*

paring his land as he now does *before* the publication of the *Agricultural Report* for Northumberland; the practice there described was unknown to him; and in my mind Mr. Blomfield has, if not the full merit of an original experimentalist, a fair and undeniable claim to have it said of him,

————— “*amovitque culpas*
“*et veteres revocavit Artes,*”

he has avoided the faults of cotemporary farmers, and skillfully *revived* an art which the experience of our fore-fathers determined to be beneficial.

==

“ I hereby declare and certify, that in the latter end of June and the beginning of July, 1801, I *drilled* Turnips upon the greater part of $7\frac{1}{2}$ acres of a field of land, which, during 7 years’ occupation, never produced enough to pay *tithe* and *poor-rates*. The quality of the land is thin-skinned upon a *gravel*, the substratum a stiff clay. I executed the work with a machine, and under the personal directions of the Rev. T. C. Munnings—drilling the major part of the Turnips upon the *alternate* furrows. The land was *not* harrowed after the *drilling*, so that each row of infant plants stood as it were in a fleet trench. The land had been fresh

clayed, and was fairly manured, but a heavy storm did much injury to the young Turnips. — Yet the result has proved *advantageous* to me; in as much as the Turnips produced a very fair crop, and resisting the effects of the late severe winter, continuing much *sounder* than the generality of Turnips, though *not* equal to what Mr. Munnings has *protected*, are now feeding off with sheep, &c. I consider this as a strong proof of the benefits of *drilling* Turnips, and an inspection of Mr. Munnings' *preserved* Turnips has fully convinced me of the advantages of *that* practice.

CHARLES RUSSEL."

GRESSENHALL, FEB. 9, 1802.

Mr. Russel is generally looked upon as a very good *practical* farmer, but I consider it as not less to his credit, that he is likewise an industrious hard-working man; and that he is *laboriously* useful to the community.

" I hereby declare and certify, that in the month of June, 1801, I *drilled* some Turnips with a machine which was given to me by the Rev. T. C. Munnings, on the same day on which other Turnips were sown broadcast in the same field; and that the Turnips so *drilled* were, very decidedly, the *best*, both

in quantity and quality, according to the best of my judgement and belief.

JOHN DAVY."

STANFIELD, FEB. 12, 1802.

Mr. Davy is an experienced *practical* farmer, uniformly attentive to his occupation, and has for years been regarded as a nice man in the cultivation of Turnips, and *very curious* in preserving the seed of them: he is therefore a man whose judgement is the result of mental conviction to himself, and which should have its weight upon the minds of others.

"We, whose names are under-written, members of the West Norfolk Agricultural Society, do hereby certify that the Rev. T. C. Munnings hath this day (Feb. 17, 1802) produced to the said society a parcel of Turnips which have been *protected* by him from the late severe frosts, and are *now* perfectly *sound*.

THOMAS WILLIAM COKE

PETRE

STEPHEN PAYNE GALWEY

M. F. RISHTON

DIXON HOSTE

HENRY BELL

THOMAS WEATHERHEAD

THOMAS CARR, Secretary

JOHN MARSHALL, M. D.

WILLIAM HOSTE

HENRY STYLEMAN

J. BURCH

THOMAS BAGGE

ANTHONY HAMOND

ALEXANDER BOWKER."

An inspection of the foregoing signatures, and a recollection that they are the names of some gentlemen of considerable consequence and of high consideration in the county of Norfolk, must be sufficient to convince all of the truth of the fact attested.

FINCHAM, NORFOLK, FEB. 19, 1802.

"I hereby certify, that in July last I sowed an inclosure of 6 acres, in this parish, with Turnips, after the usual preparatory culture; 5 acres being *drilled* by directions, and with a machine received from the Rev. Tho. C. Munings, and 1 acre sown broad-cast. On the *drilled* part the plants came up very soon and grew vigorously and rapidly, notwithstanding great drought which prevailed at and long after the time of sowing, and in consequence of which the seed perished on several parts of the broad-cast acre, and the plants which came up were very considerably delayed and stunted

in their vegetation. The plants on the *drilled* part were not only far more numerous in proportion than the others, but attained in general a much greater size. And upon the whole the result is, that these Turnips have been superior by far to any in this parish (containing near 2000 acres of arable land) sown *broad-cast*; and the land has never before been known to have produced so large a quantity of food for cattle. Of the efficacy of Mr. Munnings's *preservative* process I am fully convinced, though unfortunately not able to speak to it from my own experience, having omitted to earth up my plants till it was too late. I am, however, fully determined in future to adopt his culture in all its parts.

ROBERT FORBY."

WILLIAM PARKER, Husbandman.

"We, the undersigned, being FARMERS in the parish of Fincham, testify the truth of the facts mentioned in the above certificate.

NICH. SANDS,
A. WHITEMAN."

STOKE, FEB. 20, 1802.

"I certify, that on one acre and an half of Turnips, I have met with a result similar to

what is above stated by Mr. Forby, from whom I received Mr. Munnings's directions and machine: and that the Turnips now remaining are *confessedly* the *best* in this parish.

HENRY HELSHAM."

Mr. Forby is a clergyman who very candidly and fairly makes known the result of an experiment carried into execution in opposition to the wishes of his husbandman, and in spite of the ridicule of those Farmers whom ocular demonstration has made converts to the opinion of its utility; and they have made a very liberal confession of their conviction.

Mr. Helsham is a gentleman of the medical profession, who, undertaking the IMPROVEMENT of some few acres of land, which *Farmers* esteemed *too bad*, may be congratulated on this successful effort of his Agricultural Art.

"We, whose names are under-written, being a Committee appointed by "THE WEST NORFOLK AGRICULTURAL SOCIETY," to examine and report concerning the *drilled* and *protected* TURNIPS of the Rev. Tho. C. Munnings, do hereby certify, that we have this day (Feb. 26th, 1802) examined the said Turnips—that we have found them perfectly *sound* and *good*

---that we approve of his methods of *preserving* Turnips, and recommend the adoption of one or more of them to the general practice of occupiers, "*in proportion to their respective farms*:" And we give to Mr. Munnings our free consent to transmit a copy of this our Report to "The Society of Arts."

WM. M. HILL, }
 ANTH. BECK, } Members of W. N. A. S."
 DAN. REEVE, }

The above certificate shews clearly that the three respectable agriculturists who, as members of a pretty large society, were deputed to investigate the validity of my plans, and to report their opinion of their utility, were patriotically desirous of extending the knowledge of them, by an unequivocal communication of their judgement to a society which has long been high in public estimation, and through whose extensive correspondencies, my *methods of preserving* TURNIPS, would stand the fairest chance of obtaining universal promulgation, and receive the greatest probability of being favorably admitted into *general* practice.

"We, whose names are under-written, having this day (Feb. 26th, 1802) examined the *protected* TURNIPS of the Rev. T. C. Munnings,

and carefully *weighed* a part of one of them against a part of an *unprotected* Turnip, (apparently as *sound*,) of similar and equal dimensions, and which was carefully *picked* from an adjoining field, do hereby declare and certify, that we have found the difference to be more than $\frac{1}{4}$ part in favor of the *protected* Turnip, and to be very nearly 5-16 of the whole weight.

HEN. STYLEMAN,
 ANTH. HAMOND,
 WM. M. HILL,
 DAN. REEVE,
 THOS. KENDLE,
 JOHN KING,
 ROBERT HART,

} Members of W. N.
 A. S. and *practi-*
tical FARMERS of
 the county of
 'Norfolk.'

“ We, whose names are under-written, hereby certify, that we have this day (Feb. 8th, 1802) *weighed* one of the Rev. T. C. Munnings's *protected* Turnips against several others which have not been protected, (choosing them *as sound as we could*, and of as nearly the same size as possible, when measured round with a cord,) and that we have *invariably* found his *protected* Turnip to weigh *more* by something very *decisive*—in *no* instance by less than the weight of an *half-crown piece*, and

in many by as much as the weight of *two* penny pieces.

WILLIAM GOOD, } Of the parish of Bil-
JOHNSON JEX, } lingford."

N. B. The *unprotected* Turnips were taken from much *better* land than mine; and as the men were to have received a guinea *if* they had produced an *unprotected* Turnip weighing *more* than mine, I hope this, in co-operation with the foregoing certificate, will satisfy the public as to the *superior weight* of PROTECTED Turnips in the spring of the year.



It is thus that the evidence of some of the first characters in the county of Norfolk, of some of the most zealous promoters of agricultural improvements, and of some of the men most earnestly and deeply engaged in the pursuit of rural economics, tends to confirm the results of my experiments, to exhort others to give into my practice, and to recommend it to general attention, as a matter which will be found profitable to the individual who adopts it, and of singular and extensive public utility and benefit. Words need not be wasted to render the facts more generally notorious, more powerfully to corroborate them, or with

a view of convincing those who, through prejudice or obstinacy, may refuse to give them the credit to which they are entitled.—Prejudice and obstinacy are the great obstacles which the advocates of any new system have to encounter, and I question if there be any set of men amongst whom they are more deeply rooted than amongst the Farmers in this kingdom.—I do not say that they are always culpable, or at all times reprehensibly lukewarm. I would not have any men, nor more especially those on whom the community depends for support, listen with avidity to the suggestions of speculative innovators, or with weather-cock instability, give way to every puff, and veer round the compass in pursuit of novelty. I urge them not to forego a real and substantial advantage in order to grasp at an ideal and shadowy good; but I would have them less bigoted in favor of established customs, and not unwilling to believe that, even “in these degenerate days,” some useful discoveries may be made in that “first of all sciences which nurses and supports the rest;” that even in Agriculture some IMPROVEMENTS may be hit off, which may “carry with them more than local advantage, and be diffusive of general good to mankind.” Such I am

gratefully persuaded will *ultimately* be the effect of the *improvement* which I have here communicated in the management of the Turnip Crop, and I view with enthusiastic anticipation the innumerable comforts which will *eventually* flow from the discovery.

Let any man take upon himself to calculate the amount of the vast addition to be made to the quantum of human food when Turnips shall be generally *grown* in greater abundance, only by being generally *drilled*; let him then add the generally much greater quantity for spring consumption, in consequence of their being generally *protected*, and he will be nearly overpowered with the magnitude of the ideas which will rush upon his mind, and almost involuntarily exclaim,

“ O! fortunatos nimium sua si bona norint

“ Agricolas !”

But at the present moment, however pleasurable it may be to the mind of any one zealously devoted to the promotion of agricultural acquirements, to dwell upon the public and lasting utility of any *improvement*, and to luxuriate in the fair prospect of augmenting the happiness of man, it would certainly betray a want of sensibility not to unite in that general expression of concern, not to be affected by

that general gloom which hangs upon the public mind, for the severe and incalculable loss which the *Agricultural* WORLD has sustained by the death of

THE DUKE OF BEDFORD.

A man who, as Mr. Fox has eloquently said,
 “ *invariably* made public UTILITY the first object
 “ of his desire, and the first object of his life
 “ THE PUBLIC GOOD. A man of whom, how-
 “ ever men might differ concerning his *Politi-*
 “ *tics*, as a sincere and hearty friend to AGRI-
 “ CULTURE, *all* must agree to think well, and
 “ to regard him as a luminary destined to dis-
 “ perse the clouds of prejudice, and to shine
 “ with such unvarying and inviting splendor
 “ as should induce every one to rest satisfied
 “ with an ability to walk by his light.—AGRI-
 “ CULTURE, as it tends to *increase the produce* and
 “ the value of the country, is of course a
 “ study, in this or any other nation, which
 “ well deserves the most particular attention.
 “ This laudable pursuit formed, of late years,
 “ the principal part of his employment, and
 “ those who could appreciate his endeavors
 “ must admit, that he had done more in that
 “ way than any other individual in this coun-
 “ try. His death, I believe, has been as gene-

“ rally lamented as any that has ever occurred in this kingdom, and his loss, I am persuaded, will be very long and severely felt.”

From so patriotic an expression of friendly lamentation, from the unquestionable justice of such an eulogy, I cannot withhold my tribute of applause. I will not dare to proclaim myself so stupidly devoid of manly sensibility as not, on so mournful an occasion, to “ weep with him who weeps,” or to refuse to Mr. Fox the cordial participation of sympathetic concern.

Of the loss of *such* a man it would be folly in the extreme to deny the *feeling*---to say that I regret it not would be a lie---but to say that I perceive in it reasons for despair, would be a lie also; and it is not in my power to join in concert with men,

“ Nil oriturum tale, nil ortum tale fatentes,”

or exactly to coincide with those who regarded him as

“ Beyond all *past* example and *future*,”

because I am most pleasingly persuaded that his *illustrious* EXAMPLE has sunk deep into the hearts of many who possess most ample means, and who have likewise dispositions sanguinely inclined to promote the welfare

of the world; of many who can feel the impulse of

“ An active zeal
 “ For Britain's glory, liberty, and man.”

In the county of Norfolk we have a splendid instance of a gentleman not less heartily disposed to render service to mankind, not less heartily inclined to give all possible encouragement to every measure which is disinterestedly planned for THE PUBLIC GOOD, and from whom the public may, without fear of disappointment, certainly expect a uniform and steady perseverance in the pursuit of objects to which his mind has long been devoted. A gentleman, who, living in habits of most familiar intimacy with the noble personage alluded to, was going on with him “ *passibus equis*,” in the high road of *agricultural* improvement; and who, like him, devotes “ an almost princely fortune” to the attainment of beneficial knowledge, and to the prosecution of experiments conducive to so laudable an end.

In him, therefore, the people of this county, and of the kingdom at large, may fairly expect to find a source of consolation for a loss which all must feel, and to experience in his exertions the most satisfactory security for a public reparation of it; and they will be warranted in

this consoling expectation by the steadiness of his pursuits, by his "calm disdain of little delicacies," by

—————"That honest zeal
 "Which plans, with warm benevolence of mind,
 "Britannia's weal,"

and by an assurance of its being his decided opinion that "AGRICULTURE, successfully promoted, is one of the most certain preservatives of *national* INDEPENDENCE."

When the attention of the public is solicited to "*Miscellaneous Observations on the THEORY and PRACTICE of Agriculture*"; when it is attempted to interest it in favor of what reported trials have satisfactorily manifested to be an IMPROVEMENT which may be productive of *national* advantages; and when all possible countenance should be given to whatever may have such a tendency, it may not be altogether improper to say a few words of those societies which *profess* to encourage and to foster the successful efforts of Agricultural Experiment-
 alists. And it may be the more necessary to do this in vindication of such societies, because I am aware that an idea is gone abroad, and which has its weight with some minds, that

AGRICULTURAL SOCIETIES

have not been productive of so much public

advantage, as men had been flattered into an opinion was to result from them ; more especially as some of the certificates on which I would rely with peculiar satisfaction are attested by the acting and the active members of " the West Norfolk *Agricultural Society*."

Agricultural societies may in this county be said to be only in their infancy, and people of sanguine dispositions may have expected from them more than it has been in the power of mortals to perform. They have (generally speaking) been instituted in a time of scarcity and dearth ; and it was surely too much to look for from them to see cheapness and plenty *instantaneously* springing from their exertions. But I think the fair way of judging of their merits would be by looking at the *professed* objects of their aim, and seeing how far they may have succeeded in the attainment of those objects. In searching for the objects which it is the wish of " The West Norfolk " Agricultural Society " to encourage and to promote, we need only look at the Title Page of its Rules and Orders : and we may fairly ask, if from the unvarying pursuit of such objects much public benefit may not reasonably be expected ? Can it, for instance, do any harm to collect useful information, tending to

the acquisition of a more perfect knowledge in agriculture? surely not. Can it be of public disadvantage to pay all due attention to the *breeding* of every kind of stock? surely not. Can it be detrimental to the public interest to recommend what may be found of public utility, or for the attainment of these objects to offer premiums? I think far otherwise. Are our servants likely to be worse if length of service and fidelity be rewarded? surely no one will be hardy enough to make the assertion that they will. Is it not desirable that our labourers should be encouraged to rear their families by means of honest industry, without parochial aid, and by consequence to lessen the enormous burden of the poor rates? surely it is. If then the objects of "The West Norfolk Agricultural Society" be thus laudable, when singly viewed, I own I cannot see how they become reprehensible, or at all likely to do mischief by their friendly union. And I cannot avoid saying, that I entertain very sanguine hopes that it will be the glory of this society gradually to dissipate the bad impression which has been made upon the public mind. It is the singular felicity of this society to have its *presidential* chair filled by a gentleman who is a warm and a sincere

patroniser of *all* agricultural improvements, and who, previous to its institution, was amongst the foremost of those who were distinguished for a superior breed of stock,

“ whose fleeces whiten o’er a thousand hills;”

a breed which this society may be enabled to disseminate, and to bring into general estimation.—This society may be congratulated too upon the list of its *honorary* members; men who are earnestly and seriously engaged in the pursuit of agricultural attainments. And it may be considered as fortunate, in numbering amongst its *regular subscribing* members, many respectable gentlemen, whose minds are directed, and whose capitals are employed to obtain a more perfect knowledge of the *theory* and the *practice* of agriculture. It may possibly be said, with some degree of truth, that the same favorable representation cannot be made of *all* agricultural societies, and that some of them have mistaken the true and only laudable end of agriculture, “ *the production of the greatest quantity of human food, at the least possible expence, from a given quantity of land,*” and by striving to render animals more than necessarily and *most grossly* fat, have wasted upon *one* as much vegetable food as would have properly prepared *three* for the shambles, and

which might therefore have been sold at a lower rate: if such be the case, it is a practice which so far from my defence should meet with my animated reprobation; and I am sure that "The West Norfolk Agricultural Society" will give no countenance to so *wasteful* an expenditure of the productions of the earth.

It is amongst the axioms of this society, that it is the *business* of the agricultural part of the community to feed the members of it; that it is their *duty* to do this, so as to cause the least possible inconvenience to those who depend on them for subsistence; and that *cheapness*, as well as *plenty*, should result from the labours of the husbandman.—Its efforts are directed to discover and to encourage the propagation of such a breed of stock as, by *earlier maturity*, may furnish to our markets an additional supply of meat, and which consuming less food *individually*, may tend not only to augment the quantity, but to reduce the retail price of what is indispensably necessary for the subsistence of man; and in the very infancy of its establishment it holds out every possible encouragement to those who are steadily engaged in the pursuit of such objects.

It is its wish by fair and repeated experiments to ascertain *what kind of Sheep* may most

advantageously be kept in Norfolk ; it is its
 “ wish that such trials should be *fairly* made, as
 “ may produce conviction, what kind of sheep
 “ is *really* to be preferred ;” it earnestly desires
 that “ the Farmers should decide for them-
 “ selves by EXPERIMENT and not by OPINION,”
 with general reference to these objects ; and
 its attention has been very laudably directed to
 promote and to encourage the labours of those
 who regard UNDER-DRAINING, WATER-MEADOWS,
 and a careful CULTIVATION, with as careful a
 PROTECTION of TURNIPS, as the three grand
 and unfailing props of *practical* Agriculture.
 It takes likewise all possible pains to promul-
 gate and diffuse the knowledge of such *disco-*
veries or IMPROVEMENTS, as any of its members
 may be fortunate enough to make, and of
 which repeated trials may have confirmed the
 UTILITY. An instance of such a disposition on
 the part of the West Norfolk Agricultural So-
 ciety, redounding to my unspeakable satisfac-
 tion, and the first pride of my life, is to be
 found in the *public* recommendation which it
 gives of the adoption of my efficacious IM-
 PROVEMENT in the management of the Turnip
 Crop. And though it cannot be expected that
 that *stock* of the most superior kind should even
 in a few years be generally diffused over the

kingdom, yet, an improved method in the management of Turnips, every man who grows them may adopt as soon as it is explained to him, and as such *improvement* will immediately put it in his power to keep the general stock of his farm better than before, he will of course be enabled to furnish more meat for market from the same quantity of land; THE PUBLIC, therefore, has an undoubted right to expect that he should do it, and to consider him as an unworthy member of the community, if he be at all backward in the performance of his duty. Now, though I am persuaded that the members of "the West Norfolk Agricultural Society" will not relax in their endeavors to promulgate every practice which they may be convinced will be generally useful; though I am not at all apprehensive but that my *improvement* in the management of Turnips will *gradually* make its way, by silently operating the conviction of its benefits; though I am inclined to believe, that however slight my dependence may be upon the reason of great numbers of the Farmers, I may rely upon their feelings with some confidence of success; though I believe that now they have been suffering from the *want* of Turnips, they will begin to think about the *worth* of them;

and that, therefore, *interest* will suggest the propriety of attending to the PRESERVATION of them ;—yet I would avail myself of this public opportunity of calling for assistance upon all those amongst them, whose minds have been enlightened, and whose ideas have been expanded by a liberal education. And not confining my appeal to those only who are *professionally* Farmers, I would more particularly solicit of those gentlemen who occupy to a large extent *their own* landed possessions, and who desiring to intermix the “*utile dulci*,” would wish that public benefit should arise even from their amusements, to lose no time in entering upon the practice, that their example may have its weight with all who may come within the sphere of their influence. I would request of such CLERGYMEN as are in the habit of attending to rural concerns, strenuously to advise those, with whom they have intercourse, to give the practice *at least* a trial. And I would presume to hope that even

“ THE BOARD OF AGRICULTURE ”

will not consider a matter of such momentous importance as unworthy of its countenance and support ; that its attention will be given to encourage and promote the adoption of it, by a

public and ample remuneration of the individual who may *successfully* execute the necessary work for the preservation of Turnips,"
 "upon the greatest number of acres."

My anxiety in this business arises from the conviction that *every year*, which may elapse before the practice of preserving Turnips shall become *general*, is of much more consequence to the community than shallow superficial observers can possibly imagine; or than even those who are generally esteemed considerate would at first suppose. We have been told, and that upon the authority of Mr. Kent, that the county of Norfolk contains 729,600 acres of *arable* land; but supposing it to contain only 700,000 acres, and supposing too (what I am persuaded is much below the fact) that 100,000 of those acres are *annually* sown with Turnips—that one-third part of those Turnips, or about 33,000 acres, are consumed before any danger arises from the destructive severity of frost; and that the remainder, or something more than 66,000 acres, are in consequence of being *protected*, rendered better, for winter and spring consumption, by the small sum of only 20s. per acre, it will then appear, with almost arithmetical certainty and demonstration, that at least 66,000 pounds per annum will be

saved to that part of the community engaged in the agricultural concerns of the county of Norfolk only; and that in other counties the saving will be proportionally co-extensive with the cultivation of Turnips. It may here be said that I am reasoning hypothetically—I am so; but my suppositions are so far justified by facts that I think no candid person will dispute the fairness of my conclusion. And considering myself in the light of “a public benefactor, without a prospect of remuneration but from public munificence,” I am sanguine enough to suppose that some one of our worthy Representatives in Parliament may *patriotically* take upon himself the task of recommending my IMPROVEMENT to the deliberative wisdom of the Legislature.—I am indeed, emboldened to entertain such an idea from the circumstance of much attention being paid to various applications of a similar nature which have *lately* come before Parliament, in which, though much was said of the advantages derived from the discoveries of the applicants, nothing was advanced approaching so nearly to a proof of those advantages as what I have stated in demonstration of the benefits resulting from *my improvement*.—I beg to be understood here, as not aiming to depreciate the merits of

any who have been thought worthy of Parliamentary consideration; but merely as expressing an humble hope, that when my Petition shall be preferred I may meet with as much indulgence.---That it may be observed, that “ similar applications have been made and “ agreed to at various periods;” that some honorable member may rise to say, that “ he “ is authorised by the Chancellor of the Ex- “ chequer to state, that my Petition has his “ Majesty’s gracious recommendation;” that another may remark on the “ great *national* “ UTILITY of my IMPROVEMENT;” and that, “ however jealous Parliament may or ought “ to be of the expenditure of the *public* money, “ it will be admitted, that it is but common “ justice to allow some compensation to a man “ by whose TALENT and INDUSTRY AN IMPROVE- “ MENT of such invaluable and universal im- “ portance is furnished to the world; and “ who, from the nature of his *improvement*, can “ obtain *pecuniary* remuneration in no other “ way than by an application to Parliament. “ The decision of which must also be material “ in this view, that by giving a stamp and “ authentication of the *utility* of the *improve-* “ *ment* it will recommend it to general use; “ and that it is to be lamented, that many

“ inventions capable of doing extensive good
 “ are but too little known.” That upon ex-
 patiating upon the national advantages to arise
 from my *improvement*, he may observe, that he
 concludes “ no sensible man will bring an
 “ argument of a *few thousand pounds* to coun-
 “ terbalance such advantages ;” that “ if PAR-
 “ LIAMENT would abundantly reward the man
 “ who, by a discovery of the *longitude*, might
 “ facilitate the COMMERCE of his country, not
 “ less is due to him who, by a most material
 “ IMPROVEMENT in

“ AGRICULTURE,

“ has contributed to the universal comfort of
 “ his fellow creatures ; and whose claim to
 “ *public* reward is founded in such a combina-
 “ tion of considerations as cannot fail to make
 “ the most forcible appeal to the generosity,
 “ the justice, and the *wisdom* of Parliament.”

But if I should *not* be so fortunate as to
 obtain the approbation and the *gratuitous remun-*
eration of the British Legislature, I have the
 consolation of believing that

THE FARMERS,

who are in the habit of growing TURNIPS, will
 make a magnificent display of their GRATITUDE

by *voluntarily* and *generally* imposing upon themselves the very trifling tax of One Shilling per Acre upon their Turnip Crop to be appropriated to my *peculiar use* for the *short* period of SEVEN YEARS.

And if even this flattering, this golden expectation should deceive me, I shall still have the exalted satisfaction of considering myself as the author of an *Agricultural IMPROVEMENT*, which, by adding to the quantum of human food, may have a direct tendency to reduce the price of the necessaries of life, to assist in the maintenance of an increasing population, to promote the prosperity of my COUNTRY, and to ameliorate the condition of MAN.—“Such is the *first wish* of my heart;” and with the most earnest and sincere desire of seeing it accomplished, I have, “*almost with vehemence*,” exhorted Agriculturists to aim at the attainment of what is not the wild, unfounded conclusion of a fanciful and extravagant THEORIST, but the calm, determined judgement of a dispassionate mind, which has been influenced only by established and indisputable facts: and truth will warrant me in declaring, that I have given them the advice of one

“Who, while he bids them, sets the example too,”

“presens hortatur et optat,”

of one who would most readily adopt any practice promotive of

"THE PUBLIC GOOD,"

and who is not so tenacious of his own opinion as not to listen with attention to what the *experience* of others may determine to be worthy of general imitation; but who can seriously declare, with the most candid and cordial sincerity, to the great body of English FARMERS,

"Some better precepts, if you can, impart,

"Why do; I'll follow them with all my heart;"

—————"si quid novisti rectius istis

"Candidus imperti, si non his utere mecum."

But I am unwilling to conclude without making an extract from some letters which I have received from Nathaniel Kent, Esq. a gentleman of whom the agricultural world has long thought most highly, and whose opinion of my plan I consider as of much more than common value; it is indeed gratifying to my fond ambition to be

"laudatus a laudato viro."

"I give you," says Mr. Kent, "great credit
 "for your laudable endeavors to persuade the
 "FARMERS in general to adopt your method
 "of PRESERVING your Turnips, which is a thing
 "of the greatest consequence to them."—After
 seeing my Turnips, Mr. Kent observed, "I
 "look upon what you have done to be one of

“ the greatest IMPROVEMENTS which has been
 “ hit upon in the memory of man, and of the
 “ first consequence to the *agricultural* world.”

Again he says, “ Your method of depositing
 “ your Turnips in trenches is certainly an IM-
 “ PROVEMENT upon the Northumberland plan,
 “ and your little machine for sowing the seeds
 “ cannot be sufficiently admired for its SIM-
 “ PPLICITY and UTILITY.”

I am sensible that at present my whole
 practice is thought frivolous by many who see
 not the beauty of its *extreme* SIMPLICITY; but
 it is to that circumstance I confidently trust
 for *ultimate* SUCCESS. In my endeavor to lay
 before the public an account of my proceed-
 ings, I have been anxious only “ to find out
 “ acceptable words, and that which I have
 “ written is upright; even words of TRUTH:”
 in perfect conformity with which, I may say
 that I am animated with a fond belief that POS-
 TERITY will regard me as an *experimental* agri-
 culturist, whose earnest aim it was

“ To scatter PLENTY o’er a smiling land;”

to introduce such beneficial innovations as
 might render ENGLAND

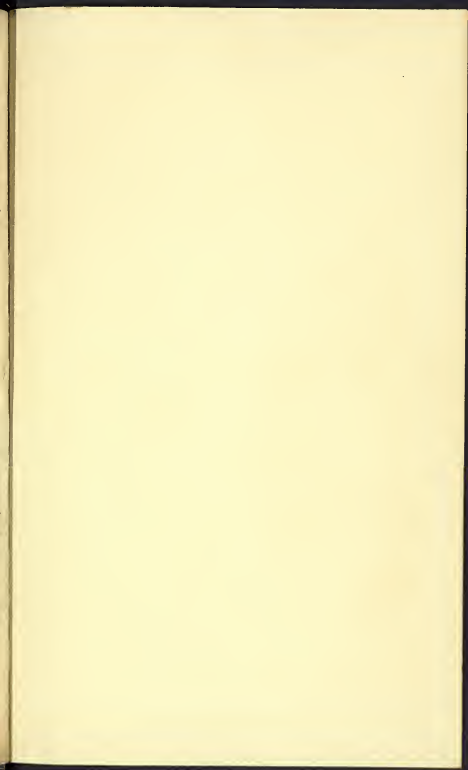
————— “ the *exhaustless* granary of a world;”

and which laying *a foundation* for future im-
 provement might enable her inhabitants to
 rejoice in the circumstance of having their

"Garners full and plenteous with all manner
 "of store; of finding their sheep bringing
 "forth thousands and ten thousands," and
 considering themselves as "a happy people
 "who are in such a case," might gratefully
 recollect, and at all times be ready to acknow-
 ledge, that they are "a people blessed in
 "having the Lord for their God."

It is at this time a consoling circumstance
 that it has pleased God to put an end to the
 dreadful calamities of war; and I would ex-
 press an heart-springing hope, that as we
 are now permitted to "beat our swords into
 "ploughshares, and our spears into pruning
 "hooks," we may never again hear of
 "nation rising against nation;" but that the
 only contest now may be, who shall most
 earnestly become "a people zealous of good
 "works;" who shall most assiduously culti-
 vate the arts of PEACE; that the happiness of
 millions may now be found in a diligent appli-
 cation to the most *rational* of all pursuits, and
 that MAN may henceforth be emulously devoted
 to the prosecution of the *Improvement* of

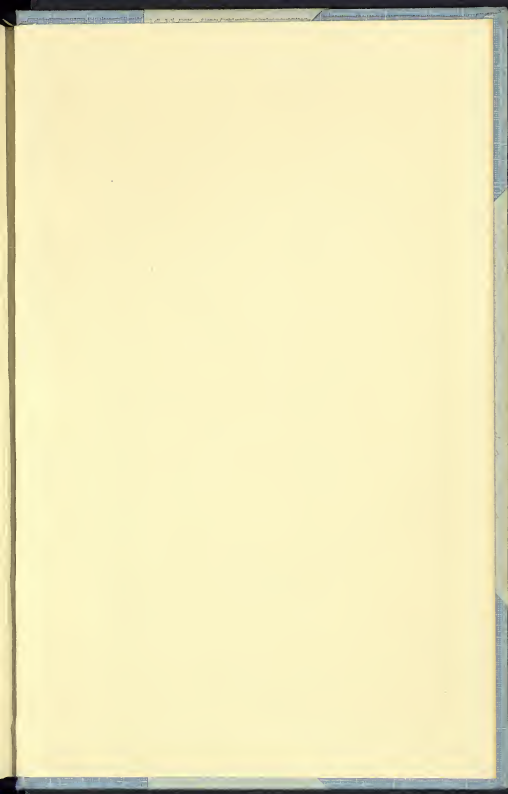
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